Supporting Information for

Asymmetric response of short- and long-duration dry spells to warming during the warm-rain season over Eastern Monsoon China

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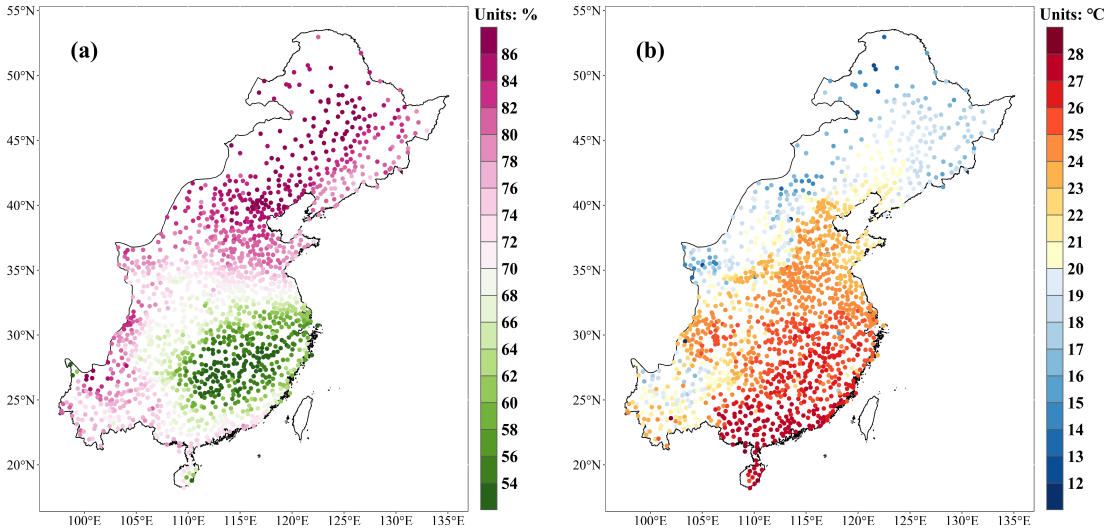


Fig. S1 Spatial distribution of the proportion of precipitation occurring during the warm-rain season relative to total annual precipitation (a) and spatial distribution of averaged surface air temperature (SAT) (units: ℃) during the warm-rain season (b) in Eastern Monsoon China (EMC) from 1961 to 2019.

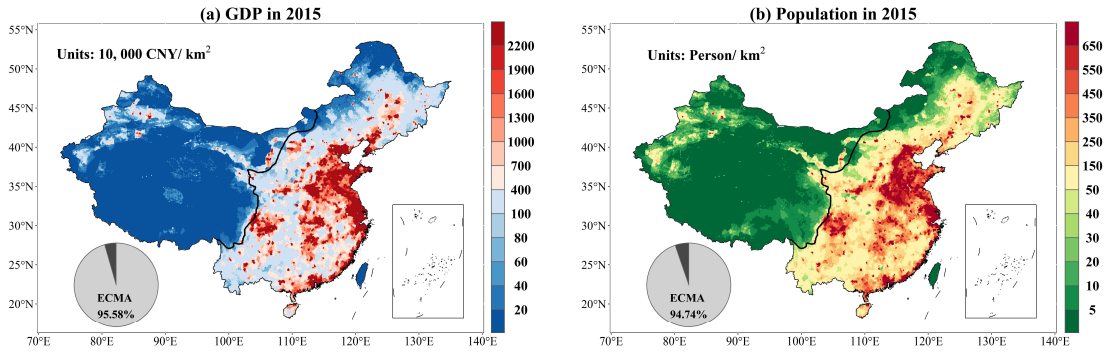


Fig. S2 Spatial distribution of Gross Domestic Product (GDP) and population (persons/km^2) in the year 2015 over China. Pie charts indicate the percentage of GDP and population over EMC relative to the whole of China, respectively.

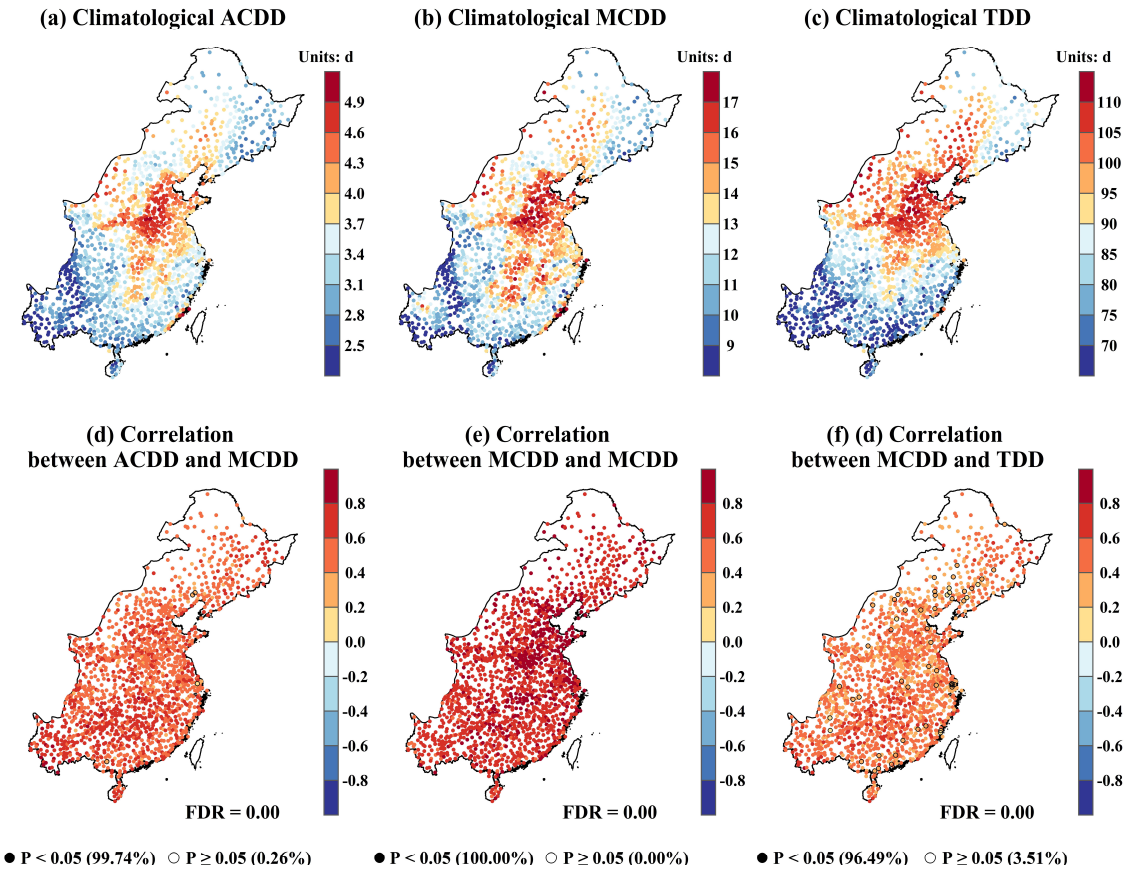


Fig. S3 Spatial distributions of climatological average and maximum consecutive dry days (ACDD and MCDD; units: d) and total dry days (TDD; units: d) (a-c), and Spearman rank correlations between the same metrics (d-f) in the warm-rain season of 1961-2019 across EMC. The *p* values are at the 0.05 level of field significance using the FDR approach.

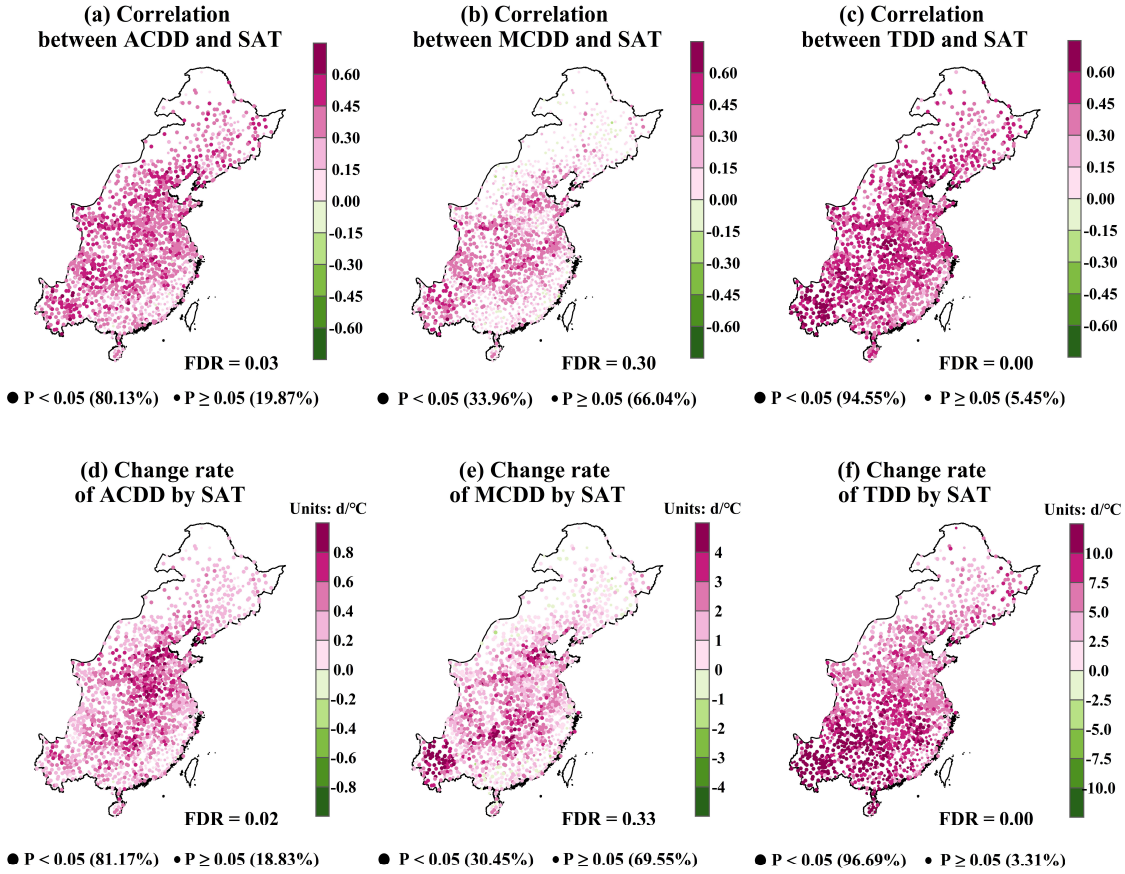


Fig. S4 Spatial distributions of relations between ACDD, MCDD and TDD and SAT in the warm-rain season of 1961-2019 across EMC. a-c are correlations between ACDD, MCDD and TDD and SAT, respectively. d-f are linear regression coefficients (units: d/°C) between ACDD, MCDD and TDD and SAT, respectively. The *p* values are at the 0.05 level of field significance using the FDR approach.

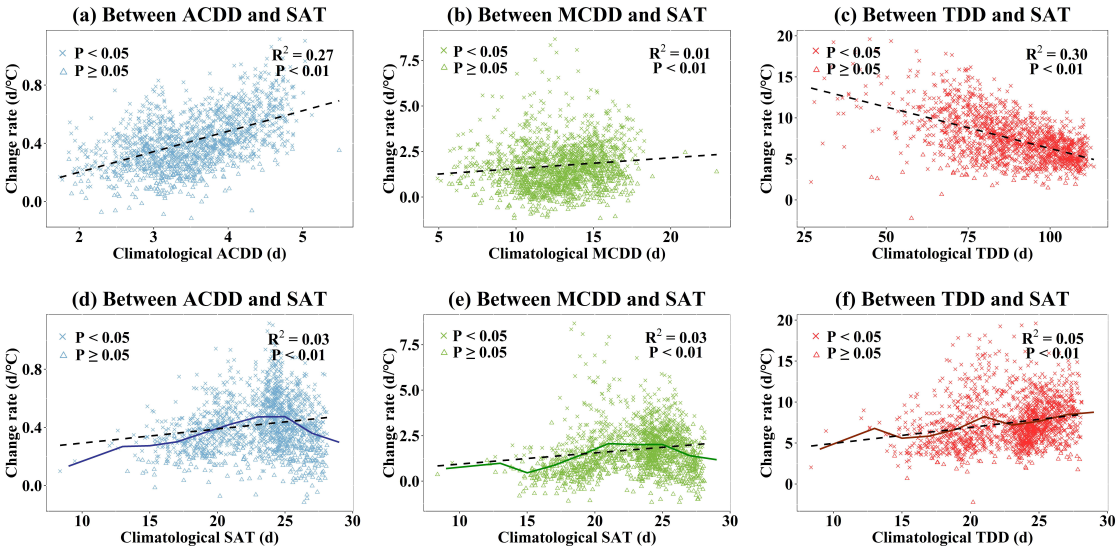


Fig. S5 Relations between changes of ACDD, MCDD and TDD per degree of SAT and corresponding climatological ACDD, MCDD, TDD, and SAT for all stations. Crosses (triangles) indicate relations between ACDD, MCDD and TDD and SAT that are significant (insignificant) at the 95% confidence level, that is, the *p* values in the stations are less than (more than) 0.05 (see Fig. 3a-c). Dashed lines are linear fitting lines for all stations; R^2 is the coefficient of determination of the linear fitting line and the *p* value is the corresponding significance. The colored solid lines in d-f are the mean values of changes of ACDD, MCDD and TDD per degree of SAT in each two-degree interval of climatological SAT (such as 10-12℃, 12-14℃, …).

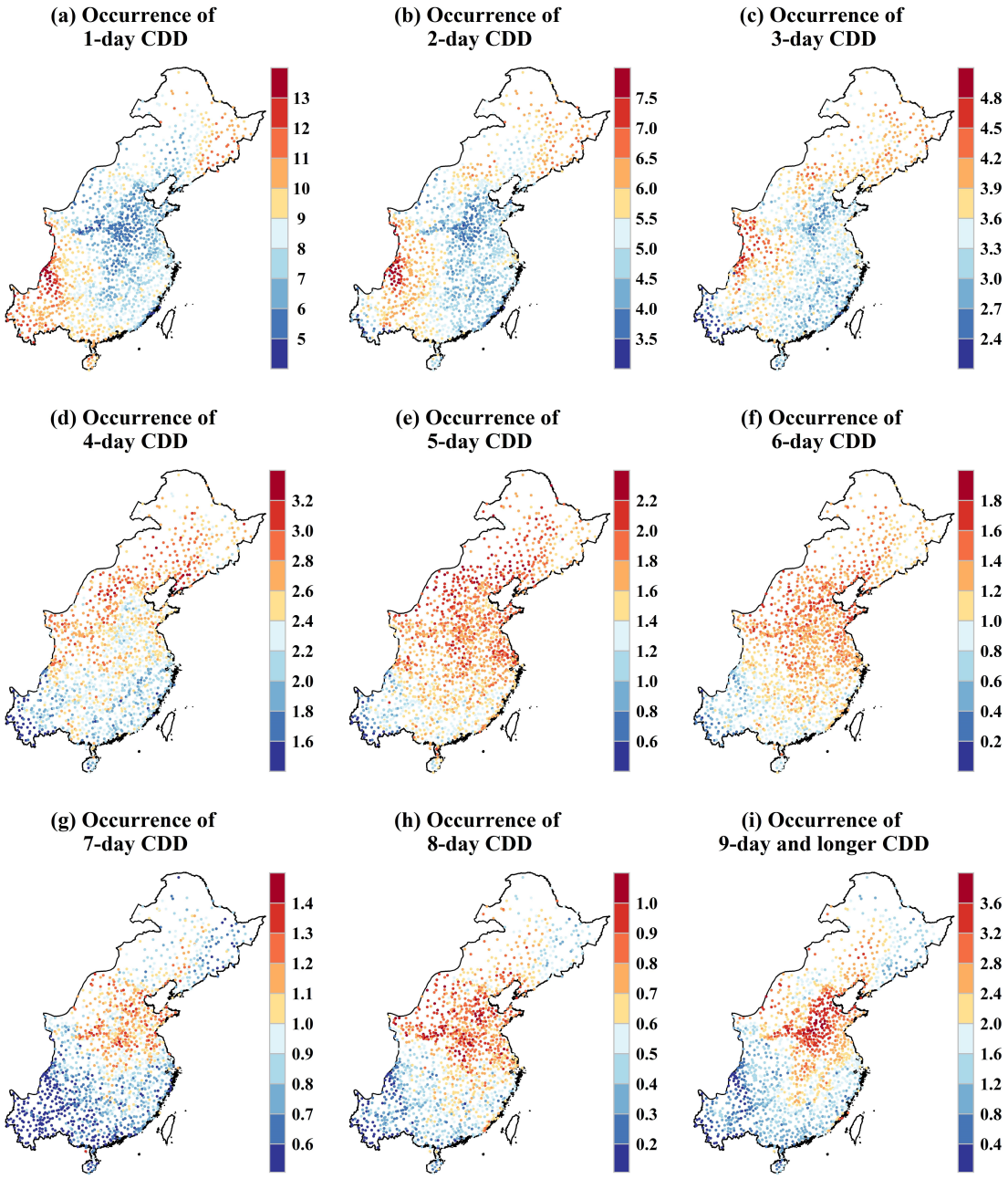


Fig. S6 Spatial distributions of annual average occurrences (units: event) of consecutive dry days (CDD) associated with different durations in the warm-rain season of 1961-2019 across EMC.

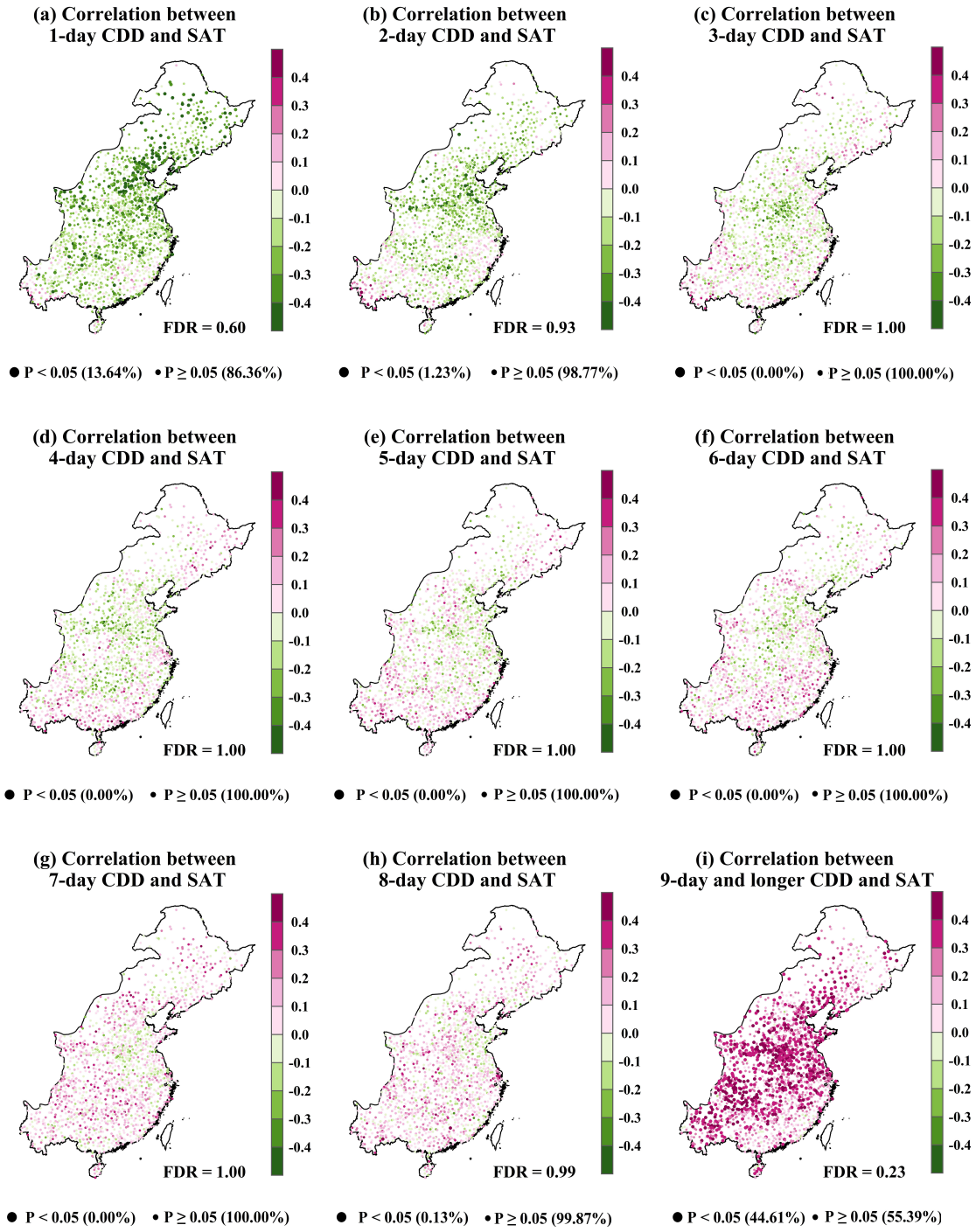


Fig. S7 Spatial distributions of Spearman correlations between the numbers of *n*-day CDD events and SAT in the warm-rain season of 1961-2019 across EMC. The *p* values are at the 0.05 level of field significance using the FDR approach.

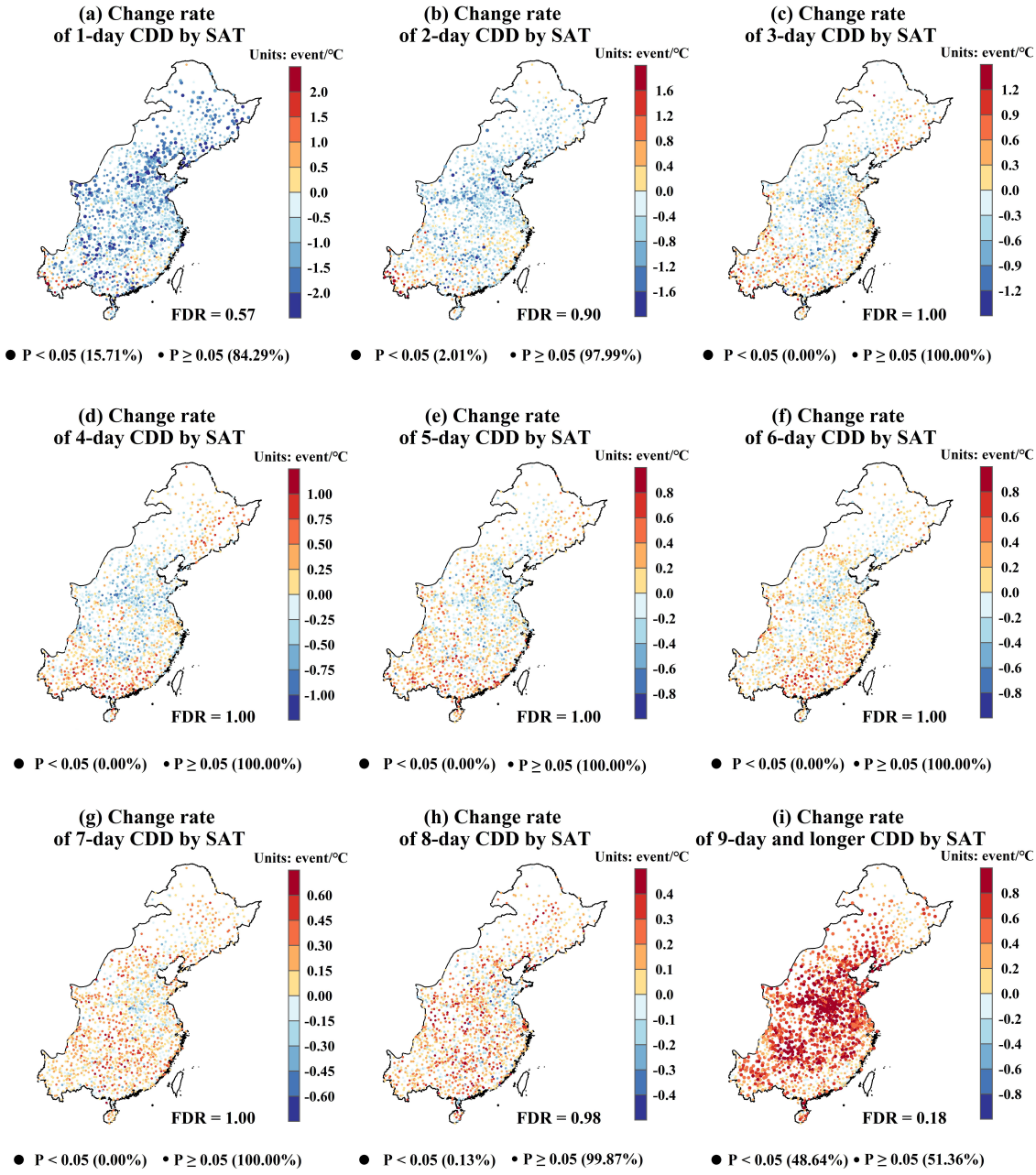


Fig. S8 Change rates (units: event/°C) of the *n*-day CDD events with SAT in the warm-rain season of 1961-2019 across EMC. The *p* values are at the 0.05 level of field significance using the FDR approach.

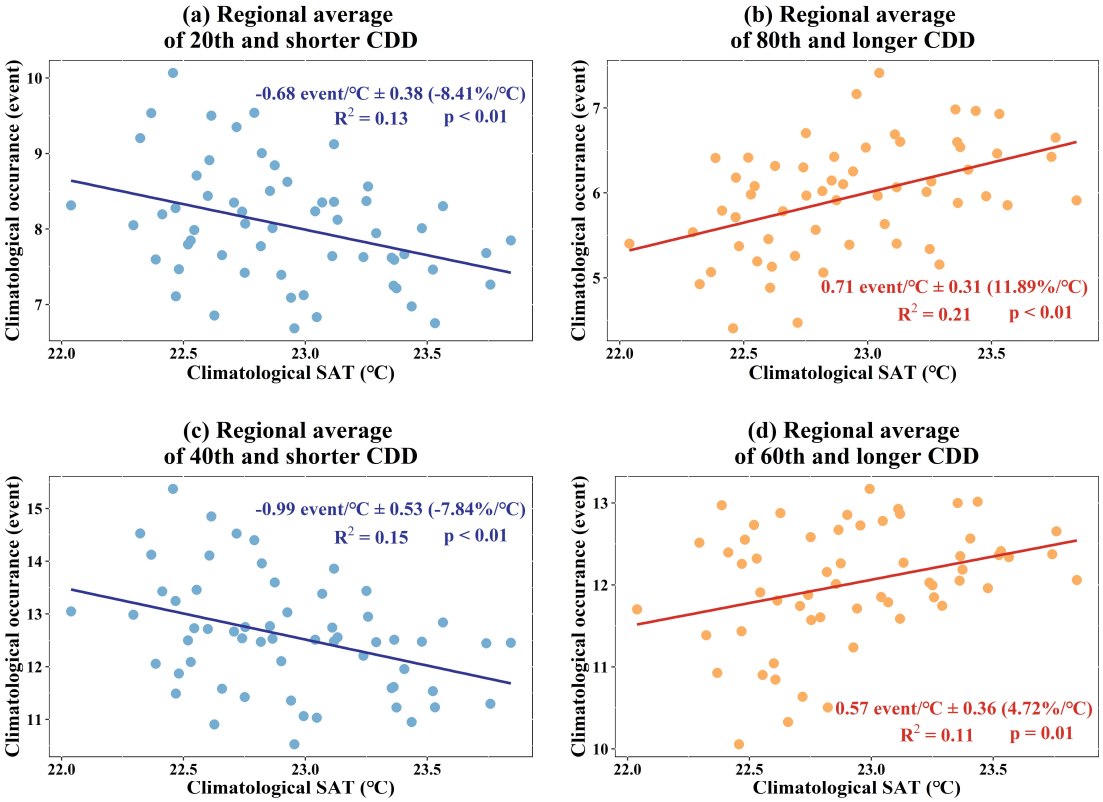


Fig. S9 Relations between regional average occurrence of short and long duration CDD and SAT in the warm-rain season of 1961-2019 over eastern monsoon China. The 20th/40th and 80th/60th percentile of durations of all identified CDD events in the warm-rain season of 1961-2019 for each station are computed as thresholds and then the counts below (above) 20th or 40th (80th or 60th) percentile of CDD events in each station are used to compute regional means. R^2 is the coefficient of determination of the linear fitting line and *p* value is the corresponding significance.